



# MSMR

## Medical Surveillance Monthly Report

### Table of Contents

Hookworm Disease - Ft. Drum, NY .....	2
Selected notifiable conditions .....	4
Notifiable sexually transmitted diseases .....	6
Malaria Outbreak, Vincenza, Italy .....	8
Surveillance trends: Hospitalization rates, Bosnia .....	8
Bosnia update: DNBI hospitalizations .....	9
Heat / Cold weather injuries, Jan - Jun, 1996 .....	11
Supplement: HIV-1 in the Army	
Status of HIV-1 infected patients .....	12
Active duty soldiers infected with HIV-1 .....	12
Prevalence of HIV-1, civilian applicants .....	13
HIV-1 testing program, 1985 - 1995 .....	14
ARD surveillance update .....	15

*Data in the MSMR is provisional, based on reports and other sources of data available to the Medical Surveillance Activity. Notifiable conditions are reported by date of onset (or date of notification when date of onset is absent). Only cases submitted as confirmed are included.*

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE <b>JUL 1996</b>		2. REPORT TYPE		3. DATES COVERED <b>00-00-1996 to 00-00-1996</b>	
4. TITLE AND SUBTITLE <b>Medical Surveillance Monthly Report (MSMR). Volume 2, Number 6, July 1996</b>				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>U.S. Army Center for Health Promotion and Preventive Medicine, Armed Forces Health Surveillance Center (AFHSC), 2900 Linden Lane, Suite 200, Silver Spring, MD, 20910</b>				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>16</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>			

Report from the field**Hookworm Disease - Ft. Drum, NY**

On 29 April 1996, a 21-year-old white male, active-duty Army soldier was admitted to Walter Reed Army Medical Center (WRAMC) due to severe iron deficiency anemia. Upon admission his hemoglobin (Hb) was 7.6 g/dL, with a hypochromic, microcytic anemia of seven months duration, intermittent diarrhea, and symptoms of hypovolemia.

The patient was born and raised in Michigan. He entered basic training at Ft. McClellan, Alabama, in 1993 and completed advanced individual training there. In January 1994, he was stationed at Ft. Drum, New York. Since his arrival, his only travel outside the continental United States was to the Jungle Operations Training Center (JOTC), Panama, in June 1995.

While in Panama, he spent his first week in the cantonment area in classroom training. During the second week, he was outside the cantonment area during the day but returned to the barracks to sleep. During the third week, he was out of the cantonment area for 4-5 days. During this time, he slept on his sleeping mat, taking off only his BDU blouse. He recalled only limited direct contact with soil, e.g., placing his hand on the ground while rising to a standing position. During the exercise, he typically sat or laid on the ground fully clothed with sleeves down while awaiting the arrival of patrolling forces. He noted that the ground in the training areas smelled of feces, though he did not see formed stool. While in the field, he slipped into and immediately climbed out of a small, deep hole filled with chest deep water.

The barracks in Panama were infested with insects upon the unit's arrival, but they were cleaned soon thereafter. He ate at several local establishments without gastrointestinal problems.

Two weeks after his return from Panama, he experienced non-bloody, brown, watery diarrhea lasting approximately seven days. He was evaluated at the Troop Medical Clinic (TMC) and returned to duty. He continued to have sporadic loose bowel movements approximately every two weeks.

In September 1995, a complete blood count (CBC) revealed a Hb of 11.6 g/dL and a differential with 24.1% eosinophils (normal 0-10). An absolute eosinophil count was 1,900 cells per cubic millimeter (normal 0-700). A few weeks later, a reticulocyte count was elevated at 3.3% (normal 0.5-1.5).

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*To be added to the mailing list, contact the Army Medical Surveillance Activity @ DSN 662-0471, Commercial (202) 782-0471.*

*Views and opinions expressed are not necessarily those of the Department of the Army.*

In November 1995, a follow-up CBC showed a Hb of 10.5 g/dL, with MCV, MCH, and MCHC all below normal. There were 19% eosinophils with an absolute count of 1,500/mm<sup>3</sup>. Red blood cells displayed anisocytosis and hypochromia. Iron level was 19 µg/dL (normal 35-150) and TIBC 459 µg/dL (normal 260-400). The Preventive Medicine physician was consulted, and based on the history of training at JOTC and the eosinophilia, treatment with mebendazole was recommended. Mebendazole and ferrous sulfate were prescribed, and the patient was instructed to participate in physical training (PT) at his own pace. He was temporarily assigned to duties that were less physically demanding. He experienced less fatigue and exercise intolerance, so he was noncompliant with the mebendazole.

In mid-March 1996, the patient noticed increasing fatigue, decreased exercise tolerance, and blood in his stool. His Hb was 8.4 g/dL, and MCV, MCH, and MCHC were all decreased. Eosi-

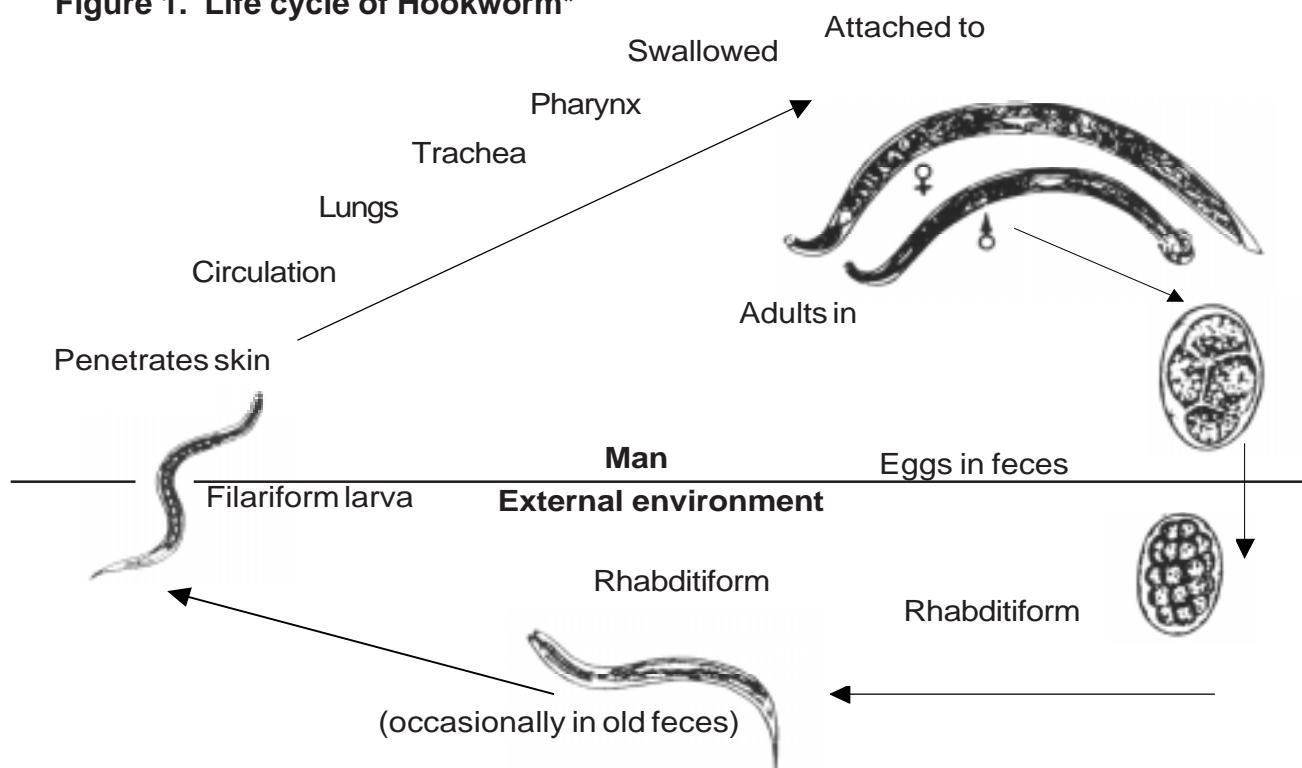
nophilia was 21.2%, and the absolute count was 900/mm<sup>3</sup>. An iron level was 2 µg/dL. A stool examination for ova and parasites was reported as negative by a contract laboratory. No fecal leukocytes were observed, and stool culture was negative. Vitamins with iron were prescribed. In early April, another stool specimen was negative for leukocytes, pathogenic organisms, and ova and parasites.

In mid-April, the patient was referred to a general surgeon. At the time, his hemoglobin was 8.0 g/dL with a 25% eosinophilia and significantly abnormal RBC morphology. An upper GI series and SBFT were suggestive of a small duodenal ulcer, terminal ileitis, and enlarged spleen. An EGD was negative for an ulcer.

Upon admission to WRAMC, review of systems revealed night sweats, fatigue, shortness of breath, dizziness on exertion, a 20 pound weight gain, and low back pain in addition to the history of periodic loose stools and anemia. Stools from a

*Continued on page 7*

**Figure 1. Life cycle of Hookworm\***



\* From Melvin DM, Brooke MM, Sadun EH: Common Intestinal Helminths of Man. Atlanta, Centers for Disease Control, DHEW Publication No. [CDC] 75-8286, 1964.

**TABLE I. Cases of selected notifiable conditions, United States Army\***  
**June, 1996**

Reporting MTF/Post**	Total number of reports submitted June 1996	Environmental Injuries			Viral Hepatitis			Malaria	Varicella	
		Active Duty		CO intox.	A	B	C	Active Duty	Active Duty	Other Adult
		Heat	Cold							
		Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996
NORTH ATLANTIC HSSA										
Walter Reed AMC	23	-	-	-	1	-	-	1	4	1
Aberdeen Prov. Ground	3	1	3	-	-	-	-	-	-	-
FT Belvoir, VA	0	-	-	-	-	-	-	-	-	-
FT Bragg, NC	13	13	7	-	-	-	-	2	-	-
FT Drum, NY	26	6	21	-	-	1	-	1	3	-
FT Eustis, VA	0	-	-	-	-	-	-	-	-	-
FT Knox, KY	16	-	2	-	1	1	6	-	-	-
FT Lee, VA	7	-	-	-	-	-	-	-	-	-
FT Meade, MD	0	-	1	-	-	-	1	-	8	1
USMA, West Point, NY	0	-	-	-	-	-	-	-	-	-
CENTRAL HSSA										
Fitzsimons AMC	0	-	-	-	-	-	-	1	-	-
GREAT PLAINS HSSA										
Brooke AMC	1	-	-	-	-	-	-	1	-	-
FT Carson, CO	55	-	32	-	-	-	-	-	1	-
FT Hood, TX	96	-	1	-	-	3	-	-	6	-
FT Leavenworth, KS	3	-	-	-	-	-	-	-	-	-
FT Leonard Wood, MO	19	-	2	-	1	-	-	-	16	3
FT Polk, LA	0	-	-	-	-	-	-	-	-	-
FT Riley, KS	68	-	-	-	-	-	-	-	-	-
FT Sill, OK	0	-	-	-	3	4	1	-	-	-
Panama	27	2	-	-	4	4	2	-	-	1
SOUTHEAST HSSA										
Eisenhower AMC	31	2	-	-	-	1	-	-	1	-
FT Benning, GA	2	4	-	-	-	-	-	-	8	-
FT Campbell, KY	75	1	-	-	-	-	-	-	-	-
FT Jackson, SC	48	-	-	-	-	-	-	-	-	-
FT McClellan, AL	1	-	1	-	-	-	-	-	1	-
FT Rucker, AL	0	1	-	-	-	-	-	-	-	-
FT Stewart, GA	67	-	-	-	-	1	-	-	-	-
SOUTHWEST HSSA										
Wm Beaumont AMC	43	-	-	-	1	1	-	-	1	-
FT Huachuca, AZ	0	-	-	-	-	-	-	-	-	-
FT Irwin, CA	0	-	-	-	-	-	-	-	-	-
NORTHWEST HSSA										
Madigan AMC	0	-	-	-	-	-	-	-	-	-
FT Wainwright, AK	0	-	81	-	-	-	-	-	-	-
PACIFIC HSSA      Tripler										
AMC	36	-	1	-	1	1	-	-	-	-
OTHER LOCATIONS										
Europe	17	-	-	-	1	2	1	4	2	-
Korea	6	-	1	-	-	3	-	-	6	-
Total	683	30	153	0	13	22	11	10	57	6

\* Based on date of onset.

\*\* Reports are included from main and satellite clinics. Not all sites reporting.

Date of Report: 7-Jul-96

**TABLE I. Cases of selected notifiable conditions, United States Army\* (continued)**  
**June, 1996**

Reporting MTF/Post**	Salmonellosis			Shigella			Campylobacteriosis			Tuberculosis	
	Active Duty	Other		Active Duty	Other		Active Duty	Other		Active Duty	Other
		Adult	Child		Adult	Child		Adult	Child		
	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996
<b>NORTH ATLANTIC HSSA</b>											
Walter Reed AMC	2	2	2	-	1	-	3	6	-	-	-
Aberdeen Prov. Ground	-	-	-	-	-	-	-	-	-	-	-
FT Belvoir, VA	-	3	1	-	-	-	1	3	-	-	-
FT Bragg, NC	1	-	3	2	-	2	-	-	1	-	-
FT Drum, NY	1	-	-	-	-	-	-	-	-	-	-
FT Eustis, VA	-	-	1	-	-	-	-	-	1	-	-
FT Knox, KY	-	1	1	-	-	-	-	-	-	-	-
FT Lee, VA	-	-	-	-	-	-	-	-	-	-	-
FT Meade, MD	-	-	-	-	-	-	-	-	-	-	-
USMA, West Point, NY	-	-	-	-	-	-	-	-	-	-	-
<b>CENTRAL HSSA</b>											
Fitzsimons AMC	-	-	-	-	1	-	-	-	-	-	-
<b>SOUTH CENTRAL HSSA</b>											
Brooke AMC	-	-	-	-	-	-	-	-	-	-	-
FT Carson, CO	-	-	2	1	-	-	1	-	-	-	-
FT Hood, TX	-	-	-	-	-	-	-	-	-	-	-
FT Leavenworth, KS	-	-	-	-	-	-	-	1	-	-	-
FT Leonard Wood, MO	-	-	1	-	-	-	-	-	-	-	-
FT Polk, LA	-	-	-	-	-	-	-	-	-	-	-
FT Riley, KS	-	-	-	-	-	-	-	-	-	-	-
FT Sill, OK	-	-	-	-	-	-	-	-	-	-	-
Panama	-	2	13	3	-	5	1	2	12	-	-
<b>SOUTHEAST HSSA</b>											
Eisenhower AMC	-	-	-	-	-	-	-	-	-	-	-
FT Benning, GA	-	-	-	-	-	-	-	-	-	-	-
FT Campbell, KY	-	-	-	-	-	1	1	2	-	-	1
FT Jackson, SC	-	-	1	-	-	-	-	-	-	1	1
FT McClellan, AL	-	-	-	-	-	-	-	-	-	-	-
FT Rucker, AL	-	-	-	-	-	-	-	-	-	-	-
FT Stewart, GA	1	-	1	-	-	1	-	-	-	-	-
<b>SOUTHWEST HSSA</b>											
Wm Beaumont AMC	-	1	1	-	-	-	-	-	-	-	-
FT Huachuca, AZ	-	-	-	-	-	-	-	-	-	-	-
FT Irwin, CA	-	-	-	-	-	-	-	-	-	-	-
<b>NORTHWEST HSSA</b>											
Madiqan AMC	-	-	-	-	-	-	-	-	-	-	-
FT Wainwright, AK	-	-	-	-	-	-	1	-	-	-	-
<b>PACIFIC HSSA</b>											
Tripler AMC	-	-	1	1	-	-	2	2	5	-	2
<b>OTHER LOCATIONS</b>											
Europe	1	2	8	-	-	-	1	2	1	2	1
Korea	-	-	-	-	-	-	-	-	-	3	2
<b>Total</b>	<b>6</b>	<b>11</b>	<b>36</b>	<b>7</b>	<b>2</b>	<b>9</b>	<b>11</b>	<b>18</b>	<b>20</b>	<b>6</b>	<b>7</b>

\* Based on date of onset.

\*\* Reports are included from main and satellite clinics. Not all sites reporting.

Date of Report: 7-Jul-96

**TABLE II. Cases of notifiable sexually transmitted diseases, United States Army  
June, 1996**

Reporting MTF/Post*	Chlamydia		Urethritis non-spec.		Gonorrhea		Herpes Simplex		Syphilis Prim/Sec		Syphilis Latent		Other STDs**	
	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996
<b>NORTH ATLANTIC HSSA</b>														
Walter Reed AMC	2	41	1	21	4	19	2	33	-	1	-	1	-	2
Aberdeen Prov. Ground	-	8	-	8	1	9	-	-	-	-	-	-	-	-
FT Belvoir, VA	-	22	-	-	-	6	-	1	-	-	-	-	-	-
FT Bragg, NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Drum, NY	6	34	2	13	6	39	1	10	-	-	-	-	-	1
FT Eustis, VA	-	20	-	-	-	12	-	-	-	-	-	-	-	-
FT Knox, KY	13	73	-	-	5	31	3	29	-	-	-	2	-	1
FT Lee, VA	2	38	-	1	4	24	1	2	-	-	-	-	-	-
FT Meade, MD	-	3	-	7	-	3	-	4	-	-	-	-	-	-
USMA, West Point, NY	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CENTRAL HSSA</b>														
Fitzsimons AMC	-	1	-	-	-	-	-	-	-	-	-	1	-	-
<b>SOUTH CENTRAL HSSA</b>														
Brooke AMC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Carson, CO	13	140	21	136	3	32	4	19	-	-	-	1	-	-
FT Hood, TX	17	209	10	67	8	69	3	28	-	1	-	-	-	3
FT Leavenworth, KS	3	9	-	-	-	2	-	2	-	-	-	-	-	-
FT Leonard Wood, MO	5	40	6	25	-	12	-	1	-	-	-	-	-	-
FT Polk, LA	-	23	-	-	-	12	-	2	-	-	-	-	-	-
FT Riley, KS	25	37	-	-	13	15	2	2	-	-	-	-	1	1
FT Sill, OK	8	80	4	19	5	37	1	13	-	-	-	-	2	8
Panama	6	55	-	-	-	3	1	6	-	-	-	-	3	13
<b>SOUTHEAST HSSA</b>														
Eisenhower AMC	14	74	-	1	5	23	7	37	-	1	-	-	-	1
FT Benning, GA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Campbell, KY	11	183	-	-	4	70	1	14	-	3	-	-	-	1
FT Jackson, SC	39	277	-	-	2	15	-	11	-	-	-	-	1	3
FT McClellan, AL	-	5	-	-	-	4	-	-	-	1	-	-	-	-
FT Rucker, AL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Stewart, GA	2	14	3	26	1	11	2	7	-	1	-	-	1	3
<b>SOUTHWEST HSSA</b>														
Wm Beaumont AMC	25	97	-	-	-	9	4	31	-	-	-	-	-	1
FT Huachuca, AZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Irwin, CA	-	5	-	-	-	2	-	-	-	-	-	-	-	-
<b>NORTHWEST HSSA</b>														
Madiqan AMC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Wainwright, AK	-	14	-	-	-	2	-	2	-	-	-	-	-	-
<b>PACIFIC HSSA</b>														
AMC	14	100	-	-	2	26	12	52	-	-	-	2	-	1
<b>OTHER LOCATIONS</b>														
Europe	-	43	-	-	-	13	-	5	-	-	-	-	-	3
Korea	-	7	-	-	-	3	-	4	-	-	-	-	1	6
<b>Total</b>	<b>205</b>	<b>1652</b>	<b>47</b>	<b>324</b>	<b>63</b>	<b>503</b>	<b>44</b>	<b>315</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>7</b>	<b>9</b>	<b>48</b>

\* Reports are included from main and satellite clinics. Not all sites reporting.

Date of Report: 7-Jul-96

\*\* Other STDs: (a) Chancroid (b) Granuloma Inguinale (c) Lymphogranuloma Venereum (d) Syphilis unsp. (e) Syph, tertiary (f) Syph, congenital

*Continued from page 3*

bowel prep prior to a colonoscopy were sent for evaluation where the diagnosis of hookworm was confirmed. The colonoscopy was normal.

He was begun on a course of mebendazole (100 mg BID for three consecutive days), iron therapy, and multivitamins, and was discharged to Ft. Drum on 4 May 1996. At follow-up on 10 May, the hemoglobin was 8.8 g/dL. with 4% eosinophils and an absolute eosinophil count of 200/mm<sup>3</sup>. Serial CBCs showed continued improvement, and on 31 May, the hemoglobin was 10.4 g/dL. with 1.7% eosinophils and 100/mm<sup>3</sup> absolute eosinophils. MCV and MCH were rising. At last report, the soldier's exercise tolerance was improved, but not to pre-infection levels.

*Submitted by MAJ L Keep, MC, Chief, Preventive Medicine Service, Fort Drum, NY*

**Editorial Comment:** While traditionally thought of as an affliction of tropical and subtropical populations due to walking barefoot on fecally contaminated soil, hookworm infection is also firmly established as a threat to well-shod soldiers operating in risk areas. Notable hookworm outbreaks occurred in US forces operating in Vietnam, Grenada, and Panama.

Hookworms are usually acquired when infective larvae of one of the hookworm species penetrate skin that comes in contact with contaminated soil. After penetration, which may be associated with a pruritic rash termed "ground itch", dog hookworms (*Ancylostoma caninum*) tend to die in the skin. Prior to death their migration can result in the serpiginous dermal track characteristic of cutaneous larvae migrans. In the case of human hookworm infection, the larvae continue on to the lungs via the lymphatics and bloodstream (see Figure 1 on page 3). A cough ("foxhole cough") may be associated with this passage. After entering the alveoli, the larvae ascend the trachea, descend the esophagus, and ultimately mature in the small intestine. There, through attachments to the intestinal wall, they generate a variable amount of blood loss. A few weeks after infection, symptomatic cases frequently cite abdominal pain reminiscent of

an ulcer but often worsened by eating. Though eosinophilia may be noted at this stage, it is common to find no eggs in the stool until 6-7 weeks after infection. Due to a dormant phase, eggs may not show up in *Ancylostoma duodenale* cases for more than six months.

As was illustrated by this soldier, a single direct stool exam that is negative should not be regarded as conclusive. Multiple formalin-ether concentrated exams and Harata-Mori cultures are sometimes useful to diagnose hookworm infection. Multiple stool exams will also help evaluate the patient for *Strongyloides stercoralis*. This worm causes an elusive and somewhat similar soil-transmitted infection with potentially disastrous consequences if it disseminates, a particular risk in immunocompromised individuals. Unlike *S. stercoralis* infections, which can persist for decades due to autoinfection, hookworms do not reproduce within the human host and tend to die over several years. Unfortunately, serologic tests for hookworm are not now considered useful though improved assays based on recombinant protein antigens are under development.

This case differed from the typical military case with respect to the marked manifestations of anemia. In contrast to classical indigenous cases, hookworm infections of soldiers usually stem from limited, lighter exposures. Consequently, the classic anemia and fatigue are not typically noted in well-nourished soldiers. Treatment of hookworm with mebendazole is generally successful. Follow-up stool exams should be done.

Military health care providers need to consider soil-transmitted helminthic infections in personnel with a history of deployment to tropical and subtropical areas. Eosinophilia is a key sign, and it may not be associated with either gastrointestinal symptoms or positive findings on stool exam. An aggressive evaluation is indicated to promptly return the patient to duty and ensure that the prescribed treatment is appropriate.

*Editorial comment submitted by PW Kelley, LTC, MC, Director, Division of Preventive Medicine, Walter Reed Army Institute of Research, Washington, D.C.*



## Case Reports

### Malaria Outbreak Associated with Deployment to Africa Vincenza, Italy

Between 9 and 11 April 1996, a reinforced company-sized unit from Vincenza, Italy, deployed to a staging base in Sierra Leone, Africa, in support of Operation Assured Response. The unit employed daily doxycycline for malaria prophylaxis based upon the anticipated medical threat in the area of operations. Soldiers were also advised to use insect repellent, treat their uniforms with insecticide (permethrin), and utilize bed nets to prevent malaria and other arthropod-transmitted infections.

After approximately three day in Sierra Leone, most of the unit moved forward to Monrovia, Liberia, to assist in non-combatant evacuation and US embassy security operations. The rest remained in Sierra Leone to maintain and secure the staging

area. Upon completion of the mission in Liberia, the larger group returned to the staging area in Sierra Leone where they remained for 2-3 days prior to redeploying to Vincenza on 21 to 23 April 1996.

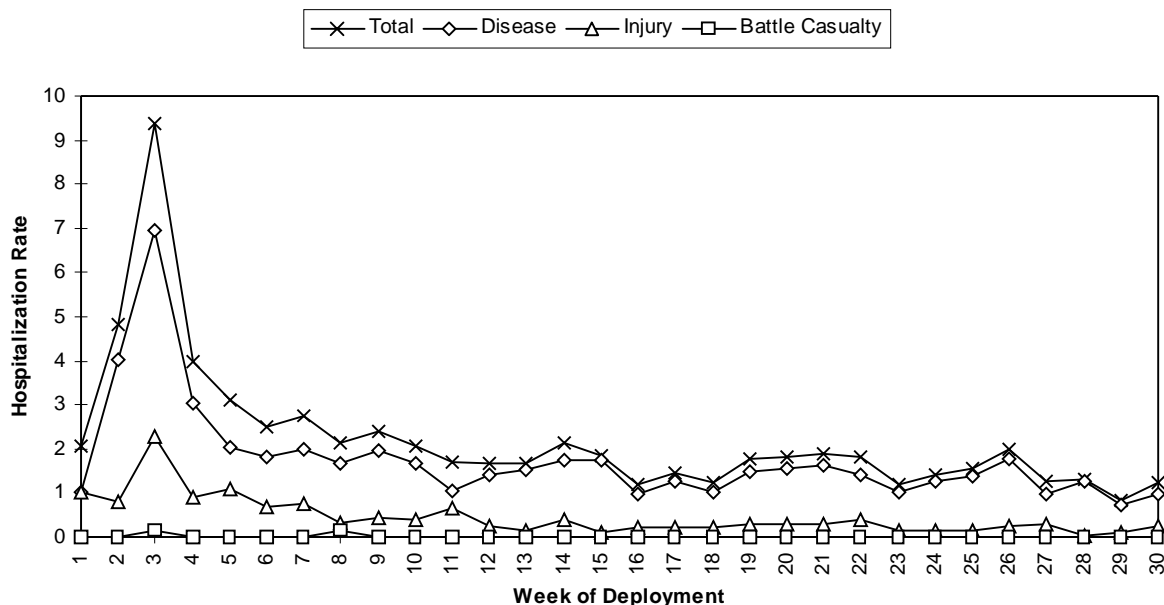
Shortly after returning from Africa, the unit traveled to Grafenwoehr, Germany, for scheduled training. Between 28 April and 1 May 1996, two soldiers were admitted to Vincenza City Hospital and two others to the US Army Hospital in Wuerzburg, Germany, with symptoms consistent with malaria. Laboratory evaluations confirmed the diagnosis of *P. falciparum* malaria in all cases. All patients were promptly treated and recovered.

On 2-3 May, preventive medicine staffmembers from the Vilseck Health Clinic and the Epidemiology

*Continued on page 10*

## Surveillance Trends, Bosnia

Active Duty Hospitalization Rates\*, Operation Joint Endeavor



\* Rates are calculated per 1000 soldiers per week

Source: PARRTS Data, USA Patient Administration and Biostatistical Activity, Fort Sam Houston, TX

*Bosnia Update***TABLE III. Active Duty Hospitalization Rates\*, Operation Joint Endeavor, 11Dec95 - 7Jul96**

ICD-9 Category	Males							Females							All
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
Infectious and Parasitic Diseases	25.6	8.2	6.5	6.1	3.3	2.4	<b>6.8</b>	0.0	11.1	11.3	23.0	0.0	0.0	<b>10.9</b>	<b>7.2</b>
Neoplasms	3.7	0.8	0.3	0.5	0.8	2.4	<b>0.8</b>	0.0	0.0	0.0	0.0	15.8	0.0	<b>1.6</b>	<b>0.9</b>
Endocrine, Nutritional, and Metabolic Disease and Immunity Disorders	0.0	0.5	0.9	0.0	0.0	1.2	<b>0.5</b>	0.0	0.0	0.0	9.2	0.0	0.0	<b>1.6</b>	<b>0.6</b>
Diseases of the Blood and Blood-Forming Organs	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	<b>0.0</b>
Mental Disorders	11.0	5.0	3.4	2.0	2.5	2.4	<b>3.7</b>	0.0	6.7	16.9	0.0	0.0	0.0	<b>7.0</b>	<b>4.1</b>
Diseases of the Nervous System and Sense Organs	14.6	4.0	4.3	2.0	4.1	3.6	<b>4.0</b>	0.0	4.4	16.9	9.2	15.8	0.0	<b>9.3</b>	<b>4.5</b>
Diseases of the Circulatory System	3.7	2.9	3.4	7.6	9.1	6.0	<b>4.8</b>	0.0	0.0	2.8	0.0	15.8	0.0	<b>2.3</b>	<b>4.5</b>
Diseases of the Respiratory System	3.7	6.6	5.3	3.5	3.3	8.5	<b>5.4</b>	0.0	17.8	8.5	0.0	15.8	9.7	<b>10.9</b>	<b>6.0</b>
Diseases of the Digestive System	14.6	17.2	12.7	9.6	7.5	9.7	<b>12.9</b>	94.9	15.5	8.5	0.0	7.9	9.7	<b>11.7</b>	<b>12.8</b>
Diseases of the Genitourinary System	3.7	3.7	6.2	6.6	2.5	10.9	<b>5.3</b>	0.0	39.9	22.6	9.2	7.9	19.4	<b>24.2</b>	<b>7.2</b>
Complications of Pregnancy, Childbirth, and the Puerperium**	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	0.0	6.7	2.8	4.6	0.0	0.0	<b>3.9</b>	<b>0.4</b>
Diseases of the Skin and Subcutaneous Tissue	14.6	4.2	2.5	3.5	1.7	0.0	<b>3.3</b>	0.0	0.0	0.0	4.6	0.0	0.0	<b>0.8</b>	<b>3.0</b>
Diseases of Musculoskeletal System and Connective Tissue	7.3	9.5	10.5	11.1	5.8	6.0	<b>9.4</b>	0.0	6.7	5.6	0.0	15.8	9.7	<b>6.2</b>	<b>9.1</b>
Congenital Abnormalities	0.0	0.5	1.2	0.0	0.0	0.0	<b>0.5</b>	0.0	4.4	0.0	0.0	0.0	0.0	<b>1.6</b>	<b>0.6</b>
Symptoms, Signs, and ill-Defined Conditions	3.7	12.5	7.7	10.1	6.6	8.5	<b>9.6</b>	158.2	48.8	19.8	18.4	15.8	9.7	<b>31.9</b>	<b>11.9</b>
Injury and Poisoning	29.2	20.4	19.2	18.2	9.1	2.4	<b>17.4</b>	63.3	42.2	16.9	9.2	7.9	0.0	<b>23.4</b>	<b>18.0</b>
<b>All Hospitalizations</b>	<b>135.2</b>	<b>96.2</b>	<b>84.2</b>	<b>81.0</b>	<b>56.3</b>	<b>64.0</b>	<b>84.4</b>	<b>316.4</b>	<b>204.2</b>	<b>132.7</b>	<b>87.4</b>	<b>118.6</b>	<b>58.1</b>	<b>147.2</b>	<b>90.8</b>

\* Rates are calculated per 1000 soldiers per year based on cumulative person time.

\*\* Includes normal delivery

*Continued from page 8*

Response Team from CHPPM-Europe assisted in the conduct of an epidemiologic investigation. Questionnaires were given to soldiers in the affected unit to identify factors associated with malaria risk. All four malaria cases occurred in the relatively small group that remained at the staging area in Sierra Leone throughout the operation. More than half (56%) of the respondents recalled attending a medical threat briefing prior to deploying. However, only one of the four cases recalled attending such a briefing. Only 3% of all deployed soldiers reported using bed-netting during the operation, and only 3% pretreated their uniforms with permethrin. None of the cases pretreated their uniforms with permethrin. Nearly all soldiers (99%) were issued doxycycline prior to deploying, and most (79%) reported missing no more than two doses during or after the operation. In contrast, two of the cases did not receive doxycycline until four days into the operation and another was unable to tolerate the medication for the first three days due to flu-like symptoms. In Sierra Leone, the soldiers occupied GP-medium tents

with flaps rolled up; in contrast, in Liberia, they were billeted on embassy grounds in fixed facilities equipped with air conditioning and window screens. Most soldiers (84%) reported proper wear of the uniform during the day; however, at night many slept on top of their sleeping bags in shorts and T-shirts.

None of the cases used insect repellent in the prescribed manner, e.g., Army DEET applied to exposed skin every 12 hours. Two of the cases reported use of a commercial repellent—but “less than 25% of the time” and only once daily. Among all soldiers, 28% used insect repellent any time during the operation, and among those who used repellent, at least 40% used commercial products instead of Army DEET, and most (88%) applied it less frequently than prescribed. Overall, approximately 1% of the soldiers used insect repellent appropriately during the operation.

*Editorial comment submitted by Dr. John H. Cross, PhD Professor, Tropical Public Health, Department of Preventive Medicine and Biometrics, Uniformed Services University of the Health Sciences*

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### **Correction, Vol 2 No 5**

The medical treatment facilities on Table III, Reported heat and cold injuries for U.S. Army MTFs (page 13) were mislabeled. The corrected table (updated through June) appears on page 11 of this issue.

**TABLE III. Reported heat and cold weather injuries, United States Army, Jan-Jun 1996\***

Reporting MTF/Post**	Heat Injuries				Cold Weather Injuries							
	Heat Exhaustion		Heat Stroke		Frostbite		Hypothermia		Immersion		Unspecified	
	M	F	M	F	M	F	M	F	M	F	M	F
<b>NORTH ATLANTIC HSSA</b>												
Walter Reed AMC	-	-	-	-	-	-	-	-	-	-	-	-
Aberdeen Prov. Ground	1	-	-	-	-	-	-	-	-	-	3	-
FT Belvoir, VA	-	-	-	-	-	-	-	-	-	-	-	-
FT Bragg, NC	3	2	7	1	3	-	-	-	1	-	3	-
FT Drum, NY	6	-	-	-	11	-	-	-	9	1	-	-
FT Eustis, VA	-	-	-	-	-	-	-	-	-	-	-	-
FT Knox, KY	-	-	-	-	2	-	-	-	-	-	-	-
FT Lee, VA	-	-	-	-	-	-	-	-	-	-	-	-
FT Meade, MD	-	-	-	-	-	-	-	-	-	-	1	-
USMA, West Point, NY	-	-	-	-	-	-	-	-	-	-	-	-
<b>CENTRAL HSSA</b>												
Fitzsimons AMC	-	-	-	-	-	-	-	-	-	-	-	-
<b>SOUTH CENTRAL HSSA</b>												
Brooke AMC	-	-	-	-	-	-	-	-	-	-	-	-
FT Carson, CO	-	-	-	-	22	6	-	-	-	-	4	-
FT Hood, TX	-	-	-	-	-	-	-	-	-	-	-	1
FT Leavenworth, KS	-	-	-	-	-	-	-	-	-	-	-	-
FT Leonard Wood, MO	-	-	-	-	1	-	-	-	1	-	-	-
FT Polk, LA	-	-	-	-	-	-	-	-	-	-	-	-
FT Riley, KS	-	-	-	-	-	-	-	-	-	-	-	-
FT Sill, OK	-	-	-	-	-	-	-	-	-	-	-	-
Panama	-	-	-	-	-	-	-	-	-	-	-	-
<b>SOUTHEAST HSSA</b>												
Eisenhower AMC	1	-	1	-	-	-	-	-	-	-	-	-
FT Benning, GA	-	-	4	-	-	-	-	-	-	-	-	-
FT Campbell, KY	-	-	1	-	-	-	-	-	-	-	-	-
FT Jackson, SC	-	-	-	-	-	-	-	-	-	-	-	-
FT McClellan, AL	-	-	-	-	-	1	-	-	-	-	-	-
FT Rucker, AL	1	-	-	-	-	-	-	-	-	-	-	-
FT Stewart, GA	-	-	-	-	-	-	-	-	-	-	-	-
<b>SOUTHWEST HSSA</b>												
Wm Beaumont AMC	-	-	-	-	-	-	-	-	-	-	-	-
FT Huachuca, AZ	-	-	-	-	-	-	-	-	-	-	-	-
FT Irwin, CA	-	-	-	-	-	-	-	-	-	-	-	-
<b>NORTHWEST HSSA</b>												
Madigan AMC	-	-	-	-	-	-	-	-	-	-	-	-
FT Wainwright, AK	-	-	-	-	61	15	-	-	3	-	2	-
<b>PACIFIC HSSA</b>												
Tripler AMC	-	-	-	-	-	-	-	-	1	-	-	-
<b>OTHER LOCATIONS</b>												
Europe	-	-	-	-	-	-	-	-	-	-	-	-
Korea	-	-	-	-	1	-	-	-	-	-	-	-
<b>Total</b>	<b>12</b>	<b>2</b>	<b>13</b>	<b>1</b>	<b>101</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>1</b>	<b>13</b>	<b>1</b>

\* Army active duty cases only.

\*\* Reports are included from parent and daughter clinics. Not all sites reporting.

Date of Report:

7-Jul-96

### Supplement : HIV-1 in the Army

During 1995, 67 (males:63, females:4) of 299,958 active duty soldiers screened for HIV-1 were diagnosed with infections. The rate was 0.22 per 1000 tested which is similar to that in 1994, the year with the lowest annual rate since screening began in 1985. Currently, 324 HIV-1 infected soldiers remain on active duty. Of these, 25 are female, more than 50% are married, and most are senior enlisted. Of soldiers with HIV-1 infection who remain on active duty, 50 were initially diagnosed between 1985-87.

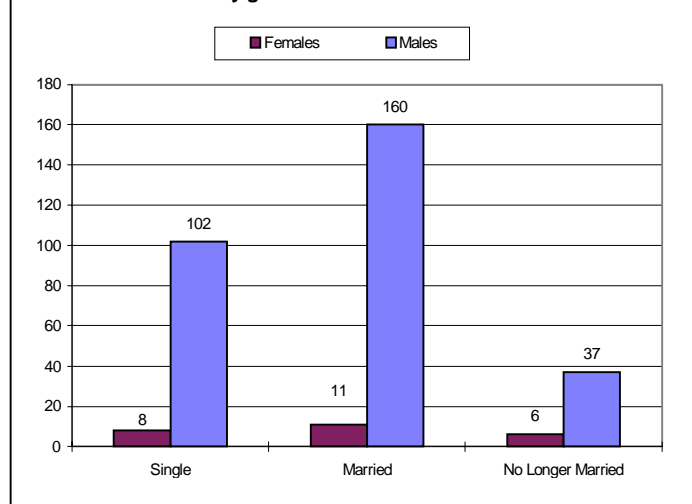
The HIV-1 rate among Reserve and National Guard soldiers was remarkably similar to that in the active component. During 1995, 66 of 285,191

(0.23 per 1000) Reserve and National Guard soldiers tested for HIV-1 were seropositive.

Among civilian applicants for military service, HIV-1 seroprevalences in 1995 continued the low flat trend that began in 1992. Prevalences were remarkably similar between men and women (males:0.40 per 1000; females:0.39 per 1000). Among both black and white nonhispanic applicants, prevalences in 1995 were the lowest since screening began in 1985. Still, seroprevalences were highest among black (1.40 per 1000), lowest among white (0.12 per 1000), and intermediate among hispanic and other ethnic minority (0.42 per 1000) applicants.

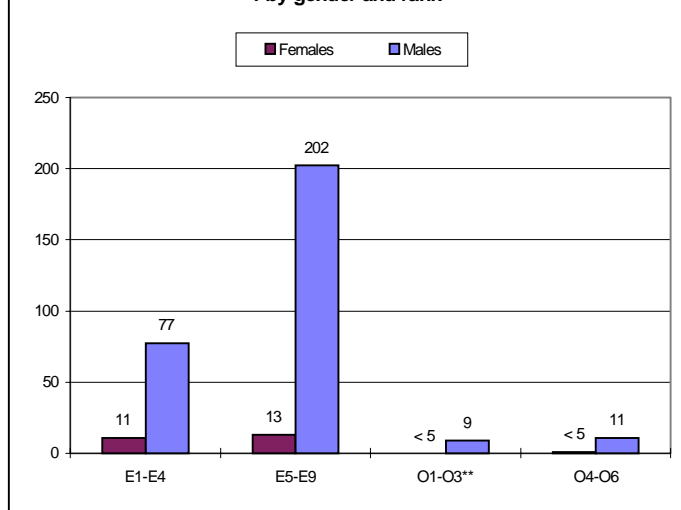
Year diagnosed	Active Duty	Former AD	Retired	Reserve Component	Former AR/NG	Deceased	Total
1985/86	36	250	325	0	262	447	1326
1987	14	68	162	0	471	193	919
1988	12	29	88	0	172	82	393
1989	15	48	79	0	123	53	336
1990	24	42	59	0	130	30	293
1991	25	35	58	0	98	17	237
1992	41	22	54	0	30	12	162
1993	35	23	34	0	12	4	113
1994	48	12	17	0	10	2	94
1995	58	10	8	0	2	2	84
1996	16	3	1	0	1	0	21
<b>Total</b>	<b>324</b>	<b>542</b>	<b>885</b>	<b>0</b>	<b>1311</b>	<b>842</b>	<b>3978</b>

Figure S1. Current active duty soldiers infected with HIV-1 by gender and marital status\*



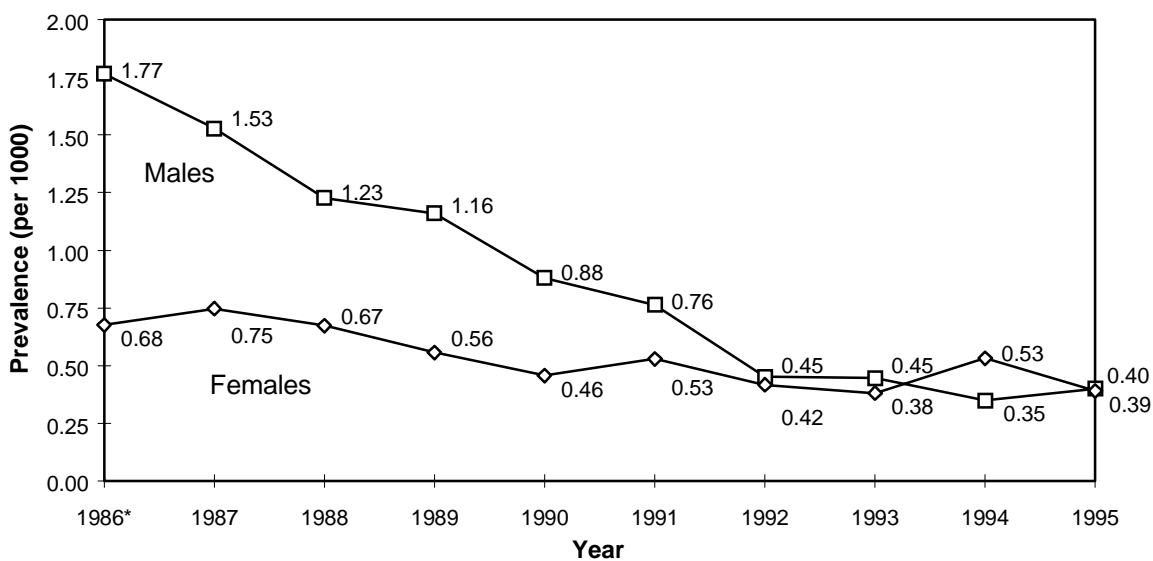
\* Army active duty only

Figure S2. Current active duty soldiers infected with HIV-1 by gender and rank\*

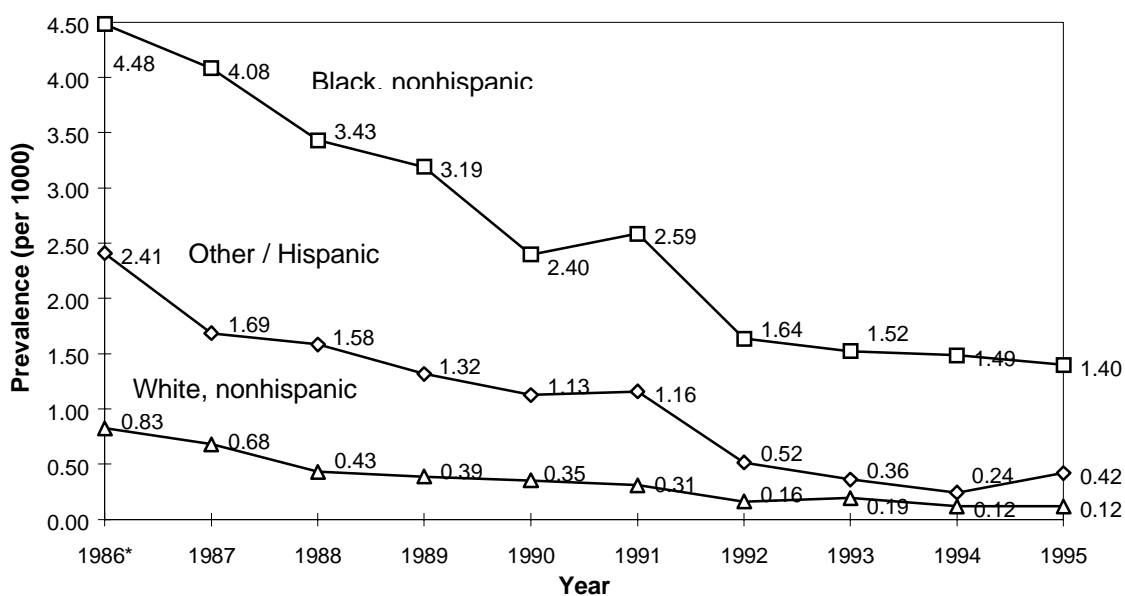


\*\* Includes warrant officer

**Figure S1. Prevalence of antibody to HIV-1, civilian applicants for US military service, by gender and year of screening, 1986 - 1995**



**Figure S2. Prevalence of antibody to HIV-1, civilian applicants for US military service by race/ethnicity and year of screening, 1986 - 1995**



\* Includes Oct 85 - Dec 85

**Table S2. Rates of new diagnoses of HIV-1 infections, US Army, 1985-1995\***

<u>Year</u>	<u>Persons Tested</u>	<u>Number of Newly Identified Positives</u>	<u>Rate per 1000 tested</u>
1985/86	367,372	1040	2.83
1987	351,439	407	1.16
1988	380,563	189	0.50
1989	385,249	172	0.45
1990	432,743	145	0.34
1991	382,674	135	0.35
1992	422,691	125	0.30
1993	356,574	91	0.26
1994	338,980	65	0.19
1995	299,958	67	0.22

**Table S3. HIV-1 tests performed for active duty and reserve component, 1995**

<u>Test Purpose</u>	<u>Active Duty</u>	<u>Reserve Component</u>	<u>Total</u>
Clinical / STD	33,717	-	33,717
Force testing	205,098	303,373	508,471
Physical exam	103,272	-	103,272
Other / Unknown	26,037	-	26,037
<b>Total Tests</b>	<b>368,124</b>	<b>303,373</b>	<b>671,497</b>
 <b>Total persons tested</b>	 <b>299,958</b>	 <b>285,191</b>	 <b>585,149</b>

**Table S4. Active duty and reserve component personnel with first HIV-1 positive in 1995\***

<u>Test Purpose</u>	<u>Active Duty</u>	<u>Reserve Component</u>	<u>Total</u>
Clinical / STD	10	0	10
Force testing	32	66	98
Physical exam	8	0	8
Other / Unknown	17	0	17
<b>Total</b>	<b>67</b>	<b>66</b>	<b>133</b>
 <b>Male</b>			
White	16	16	32
Black	37	34	71
Hispanic/Other	10	6	16
 <b>Female</b>			
White	0	1	1
Black	4	5	9
Hispanic/Other	0	1	1
 <b>Unknown</b>	0	3	3
<b>Total</b>	<b>67</b>	<b>66</b>	<b>133</b>

\* Includes active duty only

\*\* Includes all persons with first positive HIV-1 test in 1995, unless followed by a negative test.

ARD Surveillance Update

Legend		
—	ARD Rate	= (ARD cases / Trainees) * 100
■ ■ ■	SASI*	= ARD Rate * Strep Rate**

FT Benning

Ft Jackson

Ft Knox

Ft Leonard  
Wood

Ft McClellan

Ft Sill

Table IV. ARD surveillance rates, submitted by Army TRADOC posts

\* Strep/ARD Surveillance Index (SASI)

\*\*Strep Rate= (GABHS(+)) / Cultures) \* 100

Note: SASI has proven to be a reliable predictor of serious strep-related morbidity, especially acute rheumatic fever.



DEPARTMENT OF THE ARMY  
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